

# BHC AEROVOX LTD.

ALC10, ALC40  
SNAP-IN SERIES  
EXTENDED RANGE

301-6651 to  
6833



**ALUMINIUM ELECTROLYTIC CAPACITORS**

# ALC10/40 SERIES

## Board Mounting - Snap-in Terminations

Both ranges of snap-in capacitors have been extended to include 40mm diameter versions up to 80mm long. They retain the key features of the range of high CV per unit volume coupled with high ripple currents and long life performance.

**Capacitance range** ..... 150 $\mu$ F to 180,000 $\mu$ F

**Capacitance tolerance** .....  $\pm 20\%$

**Voltage range** ..... 10V to 450V d.c.

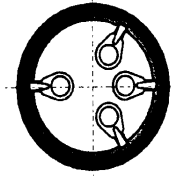
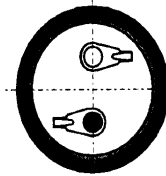
**Temperature range** ..... ALC10 -40°C to +85°C  
ALC40 -40°C to +105°C

**Case sizes** ..... 40 $\varnothing$  x 30L to 40 $\varnothing$  x 80L



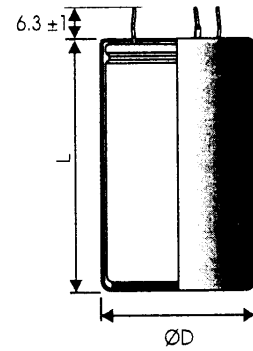
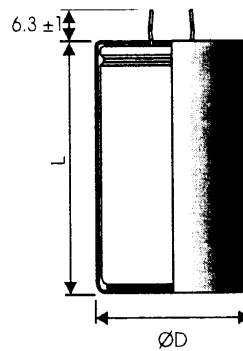
STYLE A/D

STYLE C/E



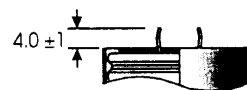
STANDARD PIN STYLE  
STYLE A

STYLE C



SHORT PIN STYLES  
STYLE D

STYLE E



Negative denoted by line on sleeve

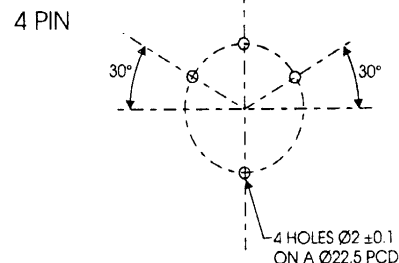
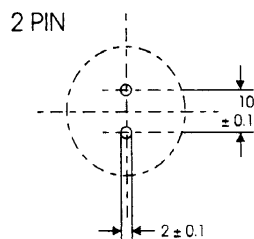
ALC10/40 SERIES

### DIMENSIONS (sleeved) mm

CASE CODE	D	L
	0+1	$\pm 2$
EB	40	30
EC	40	35
ED	40	40
EE	40	45
EF	40	50
EG	40	55
EH	40	60
EL	40	80

### Mounting

These capacitors are designed to be mounted by their terminations alone, and may be used in any position.



# ALC10/40 SERIES

Board Mounting - Snap-in Terminations

## TECHNICAL DATA

### Related documents

IEC 384-4  
DIN 41240

### Temperature Range

#### ALC10

Storage -55°C to +85°C  
Operating -40°C to +85°C  
Environmental classification 40/085/56

#### ALC40

Storage -55°C to +105°C  
Operating -40°C to +105°C  
Environmental classification 40/105/56

### Surge Voltage

#### ALC10

1000 surges (30 seconds) at 85°C with surge voltage applied.

#### ALC40

1000 surges (30 seconds) at 105°C with surge voltage applied.

### Charge/discharge

10<sup>6</sup> cycles at 25°C and rated voltage. One cycle per second with a time constant of 0.1.

### D.C. leakage current

After application of rated d.c. voltage for 5 minutes at 20°C, the d.c. leakage current shall not exceed  $(0.006 C_r U_r + 4) \mu\text{A}$ . Where  $C_r$  is the rated capacitance in  $\mu\text{F}$  and  $U_r$  is the rated d.c. voltage.

### Vibration

10Hz to 500Hz at 0.75mm or 10g for 3x2hrs duration.

### Insulation resistance

$\geq 100\text{M}\Omega$  at 100V d.c., across insulating sleeve.

### Voltage proof

$\geq 2500\text{V}$  d.c., across insulating sleeve.

### Ripple current

The following values are approximate only, to give an indication of the effects of frequency and temperature on ripple current. More accurate data can be obtained by referring to the Application Notes available from BHC Aerovox.

### FREQUENCY CORRECTION - ALC10/40

Capacitors shall withstand the rated r.m.s. ripple current as given in the tables at upper category temperature in circulating air. For frequencies other than those shown the following formula should be used:

$$\text{Ripple current} = \frac{F \times A^2 \times B^2}{100 \times (B^2 - A^2) + (F \times A^2)}$$

A = 100Hz ripple current

B = 10kHz ripple current

F = Required frequency (Hz)

### TEMPERATURE CORRECTION - ALC10

For ambient temperatures other than 85°C the following correction factors should be employed.

AMBIENT TEMPERATURE	FACTOR
30°C	2.5
50°C	2.1
70°C	1.6
85°C	1.0

### TEMPERATURE CORRECTION - ALC40

For ambient temperatures other than 105°C the following correction factors should be employed.

AMBIENT TEMPERATURE	FACTOR
50°C	2.5
60°C	2.4
70°C	2.2
85°C	1.8
105°C	1.0

N.B. The sum of the d.c. and a.c. voltage components should not exceed the d.c. voltage rating.

### Life expectancy

At rated temperature with rated voltage and ripple current applied.

RANGE	LIFE EXPECTANCY (hours)
ALC10	18000
ALC40	9000

### Capacitor marking

The capacitors are marked with items 1 to 6 from the following list as a minimum, and as much of the remaining information as is practical.

1. Rated capacitance in  $\mu\text{F}$
2. Rated voltage d.c.
3. Polarity of terminations
4. Tolerance on rated capacitance
5. Date code/Batch code
6. BHC part number
7. Environmental classification

# ALC10 SERIES

Board Mounting - Snap-in Terminations

Rated voltage	Cap $\mu$ F	Case Size	ESR m $\Omega$ at 20°C		Impedance m $\Omega$ at 20 °C,10 KHz		Ripple current A at 85°C		Type number
			100Hz				100 Hz	10 KHz	
10V d.c. (11.5V surge)	56000	40x30	65		59		4.91	5.00	ALC10_563EB010
	68000	40x40	52		47		6.78	6.91	ALC10_683ED010
	82000	40x45	43		39		7.72	7.87	ALC10_823EE010
	100000	40x50	36		32		8.79	8.95	ALC10_104EF010
	120000	40x55	32		29		9.11	9.25	ALC10_124EG010
	150000	40x60	27		24		10.04	10.19	ALC10_154EH010
	180000	40x80	20		18		13.14	13.41	ALC10_184EL010
16V d.c. (18.5V surge)	33000	40x30	76		68		5.06	5.17	ALC10_333EB016
	39000	40x35	66		60		5.63	5.74	ALC10_393EC016
	47000	40x40	53		48		6.68	6.83	ALC10_473ED016
	56000	40x45	44		40		7.67	7.84	ALC10_563EE016
	68000	40x50	37		33		8.74	8.93	ALC10_683EF016
	82000	40x55	33		29		9.05	9.22	ALC10_823EG016
	100000	40x60	27		25		10.05	10.23	ALC10_104EH016
	120000	40x80	20		18		13.13	13.43	ALC10_124EL016
25V d.c. (28.5V surge)	27000	40x30	84		76		4.10	4.15	ALC10_273EB025
	39000	40x40	59		54		5.65	5.73	ALC10_393ED025
	47000	40x45	49		44		6.44	6.53	ALC10_473EE025
	56000	40x50	40		37		7.42	7.52	ALC10_563EF025
	68000	40x55	37		34		7.56	7.64	ALC10_683EG025
	82000	40x60	31		29		8.43	8.52	ALC10_823EH025
	100000	40x80	22		20		11.20	11.36	ALC10_104EL025
35V d.c. (40V surge)	15000	40x30	87		78		4.24	4.31	ALC10_153EB035
	18000	40x35	77		70		4.66	4.73	ALC10_183EC035
	22000	40x40	61		55		5.56	5.65	ALC10_223ED035
	27000	40x45	51		46		6.30	6.40	ALC10_273EE035
	33000	40x50	42		38		7.16	7.27	ALC10_333EF035
	39000	40x60	33		30		8.75	8.91	ALC10_393EH035
	56000	40x80	23		21		10.94	11.14	ALC10_563EL035
40V d.c. (46V surge)	15000	40x30	89		79		4.42	4.51	ALC10_153EB040
	18000	40x35	78		70		4.88	4.97	ALC10_183EC040
	22000	40x40	62		56		5.81	5.92	ALC10_223ED040
	27000	40x50	43		38		7.23	7.36	ALC10_273EF040
	33000	40x60	33		30		8.74	8.91	ALC10_333EH040
	47000	40x80	23		21		10.96	11.17	ALC10_473EL040
50V d.c. (57V surge)	10000	40x30	81		72		4.15	4.24	ALC10_103EB050
	12000	40x40	65		57		5.75	5.89	ALC10_123ED050
	15000	40x45	53		47		6.48	6.64	ALC10_153EE050
	18000	40x50	44		39		7.41	7.59	ALC10_183EF050
	22000	40x55	40		36		7.60	7.75	ALC10_223EG050
	27000	40x60	33		30		8.41	8.56	ALC10_273EH050
	39000	40x80	23		21		10.49	10.68	ALC10_393EL050
63V d.c. (72.5V surge)	8200	40x30	82		72		3.95	4.03	ALC10_822EB063
	10000	40x35	80		72		4.58	4.67	ALC10_103EC063
	12000	40x40	64		57		5.42	5.55	ALC10_123ED063
	15000	40x50	44		39		7.02	7.18	ALC10_153EF063
	18000	40x60	35		31		8.54	8.75	ALC10_183EH063
	27000	40x80	24		21		10.53	10.78	ALC10_273EL063

# ALC10 SERIES

Board Mounting - Snap-in Terminations

Rated voltage	Cap $\mu$ F	Case Size	ESR $m\Omega$ at 20°C		Impedance $m\Omega$ at 20 °C, 10 KHz		Ripple current A at 85°C		Type number
			100Hz		100 Hz	10 KHz	100 Hz	10 KHz	
100V d.c. (115V surge)	2700	40x30	121		104		3.72	3.88	ALC10_272EB100
	3300	40x35	106		92		4.09	4.24	ALC10_332EC100
	3900	40x40	85		74		4.88	5.08	ALC10_392ED100
	4700	40x45	70		61		5.60	5.83	ALC10_472EE100
	5600	40x50	59		51		6.41	6.68	ALC10_562EF100
	6800	40x55	53		46		6.61	6.84	ALC10_682EG100
	8200	40x60	44		39		7.36	7.61	ALC10_822EH100
12000	40x80	31		27		9.14	9.45	ALC10_123EL100	
200V d.c. (230V surge)	820	40x30	178		142		3.06	3.63	ALC10_821EB200
	1000	40x35	153		124		3.43	3.99	ALC10_102EC200
	1200	40x40	124		99		4.02	4.69	ALC10_122ED200
	1500	40x45	101		81		4.61	5.38	ALC10_152EE200
	1800	40x50	84		68		5.27	6.15	ALC10_182EF200
	2200	40x60	67		53		6.29	7.43	ALC10_222EH200
	3300	40x80	46		37		7.83	9.17	ALC10_332EL200
250V d.c. (287V surge)	680	40x30	187		144		2.79	3.56	ALC10_681EB250
	820	40x40	153		116		3.80	4.91	ALC10_821ED250
	1000	40x45	126		96		4.33	5.58	ALC10_102EE250
	1200	40x50	104		80		4.94	6.37	ALC10_122EF250
	1500	40x55	89		69		5.29	6.58	ALC10_152EG250
	1800	40x60	74		58		5.92	7.34	ALC10_182EH250
	2200	40x80	57		43		7.33	9.49	ALC10_222EL250
400V d.c. (440V surge)	270	40x30	441		284		1.85	3.35	ALC10_271EB400
	330	40x35	378		252		2.29	3.95	ALC10_331EC400
	390	40x40	312		203		2.62	4.52	ALC10_391ED400
	470	40x45	258		168		3.00	5.19	ALC10_471EE400
	560	40x50	216		141		3.41	5.93	ALC10_561EF400
	680	40x60	177		114		3.99	7.07	ALC10_681EH400
	1000	40x80	120		78		5.00	8.82	ALC10_102EL400
450V d.c. (495V surge)	220	40x30	517		311		1.77	3.31	ALC10_221EB450
	270	40x35	427		259		2.07	3.93	ALC10_271EC450
	330	40x40	348		210		2.35	4.51	ALC10_331ED450
	390	40x45	293		177		2.70	5.17	ALC10_391EE450
	470	40x50	243		147		3.08	5.90	ALC10_471EF450
	560	40x60	202		121		3.56	7.04	ALC10_561EH450
	820	40x80	138		83		4.47	8.78	ALC10_821EL450

Note: Values of E.S.R. and Impedance quoted above are maximum

# ALC40 SERIES

Board Mounting - Snap-in Terminations

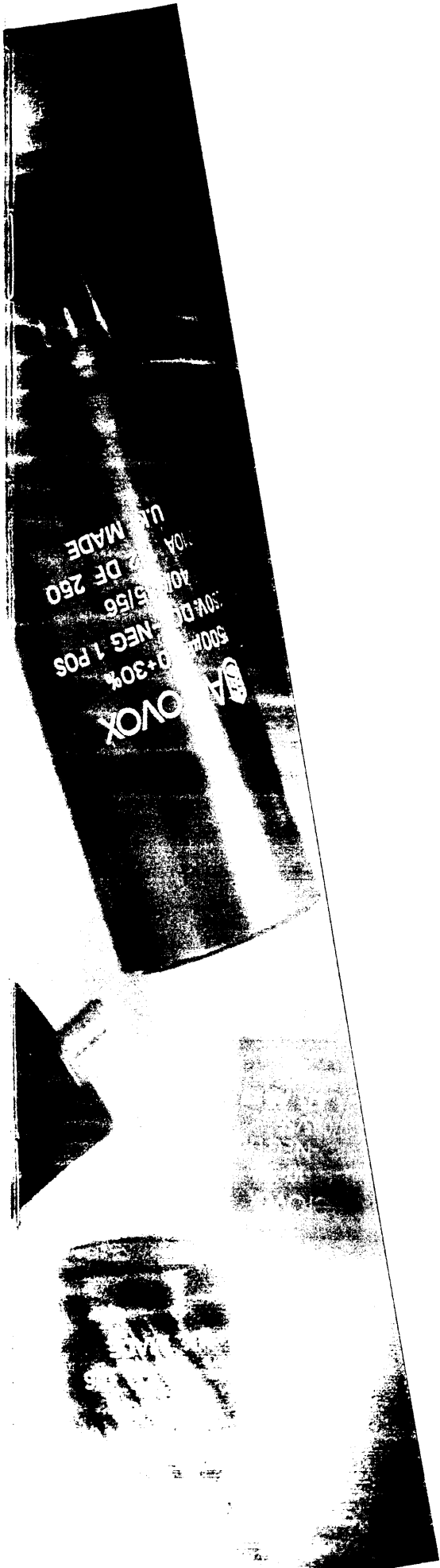
Rated voltage	Cap $\mu$ F	Case Size	ESR m $\Omega$ at 20°C		Impedance m $\Omega$ at 20 °C, 10 KHz		Ripple current A at 105°C		Type number
			100Hz		100 Hz	10 KHz	100 Hz	10 KHz	
10V d.c. (11.5V surge)	56000	40x30	65		59		4.91	5.00	ALC40_563EB010
	68000	40x40	52		47		6.78	6.91	ALC40_683ED010
	82000	40x45	43		39		7.72	7.87	ALC40_823EE010
	100000	40x50	36		32		8.79	8.95	ALC40_104EF010
	120000	40x55	32		29		9.11	9.25	ALC40_124EG010
	150000	40x60	27		24		10.04	10.19	ALC40_154EH010
	180000	40x80	19		18		13.18	13.48	ALC40_184EL010
16V d.c. (18.5V surge)	33000	40x30	76		68		5.06	5.17	ALC40_333EB016
	39000	40x35	66		60		5.63	5.74	ALC40_393EC016
	47000	40x40	53		48		6.68	6.83	ALC40_473ED016
	56000	40x45	44		40		7.67	7.84	ALC40_563EE016
	68000	40x50	37		33		8.74	8.93	ALC40_683EF016
	82000	40x55	33		29		9.05	9.22	ALC40_823EG016
	100000	40x60	27		25		10.05	10.23	ALC40_104EH016
	120000	40x80	20		18		13.13	13.43	ALC40_124EL016
25V d.c. (28.5V surge)	27000	40x30	75		69		4.03	4.09	ALC40_273EB025
	33000	40x35	66		62		4.83	4.90	ALC40_333EC025
	39000	40x40	53		49		5.57	5.65	ALC40_393ED025
	47000	40x50	41		37		7.30	7.40	ALC40_473EF025
	56000	40x55	38		35		7.51	7.61	ALC40_563EG025
	82000	40x80	22		20		11.06	11.24	ALC40_823EL025
	35V d.c. (40V surge)	15000	40x30	87		78		4.24	4.31
18000		40x35	77		70		4.66	4.73	ALC40_183EC035
22000		40x40	61		55		5.49	5.58	ALC40_223ED035
27000		40x45	51		46		6.30	6.40	ALC40_273EE035
33000		40x50	42		38		7.16	7.27	ALC40_333EF035
39000		40x60	33		30		8.75	8.91	ALC40_393EH035
56000		40x80	23		21		10.94	11.14	ALC40_563EL035
40V d.c. (46V surge)	12000	40x30	88		79		4.13	4.22	ALC40_123EB040
	15000	40x40	63		56		5.66	5.78	ALC40_153ED040
	18000	40x45	53		47		6.46	6.60	ALC40_183EE040
	22000	40x50	43		39		7.34	7.50	ALC40_223EF040
	27000	40x55	39		35		7.50	7.63	ALC40_273EG040
	47000	40x80	23		21		10.42	10.59	ALC40_473EL040
	50V d.c. (57.5V surge)	8200	40x30	91		80		4.15	4.26
12000		40x40	64		57		5.42	5.53	ALC40_123ED050
15000		40x45	53		47		6.11	6.23	ALC40_153EE050
18000		40x50	44		39		6.98	7.12	ALC40_183EF050
22000		40x60	34		30		8.45	8.63	ALC40_223EH050
33000		40x80	24		21		10.41	10.62	ALC40_333EL050
63V d.c. (72V surge)	5600	40x30	102		90		3.82	3.91	ALC40_562EB063
	6800	40x35	91		81		4.18	4.26	ALC40_682EC063
	8200	40x40	72		64		5.01	5.12	ALC40_822ED063
	10000	40x45	60		53		5.69	5.81	ALC40_103EE063
	12000	40x50	50		44		6.50	6.64	ALC40_123EF063
	15000	40x60	39		34		7.81	7.99	ALC40_153EH063
	22000	40x80	27		24		9.70	9.92	ALC40_223EL063

# ALC40 SERIES

Board Mounting - Snap-in Terminations

Rated voltage	Cap $\mu$ F	Case Size	ESR $m\Omega$ at 20°C		Impedance $m\Omega$ at 20 °C, 10 KHz		Ripple current A at 105°C		Type number
			100Hz		100 Hz	10 KHz			
100V d.c. (115V surge)	2200	40x30	128		110		3.58	3.80	ALC40_222EB100
	2700	40x40	95		80		4.92	5.24	ALC40_272ED100
	3300	40x45	78		66		5.59	5.95	ALC40_332EE100
	3900	40x50	65		55		6.41	6.83	ALC40_392EF100
	4700	40x55	58		50		6.67	7.04	ALC40_472EG100
	5600	40x60	49		42		7.46	7.87	ALC40_562EH100
	8200	40x80	34		29		9.28	9.78	ALC40_822EL100
200V d.c. (230V surge)	680	40x30	202		158		2.97	3.67	ALC40_681EB200
	820	40x35	173		137		3.35	4.06	ALC40_821EC200
	1000	40x40	140		110		3.92	4.80	ALC40_102ED200
	1200	40x45	116		91		4.50	5.50	ALC40_122EE200
	1500	40x50	94		74		5.13	6.23	ALC40_152EF200
	1800	40x60	76		60		6.10	7.53	ALC40_182EH200
	2700	40x80	52		41		7.62	9.32	ALC40_272EL200
250V d.c. (287V surge)	470	40x30	258		193		2.59	3.49	ALC40_471EB250
	560	40x35	221		166		3.05	4.16	ALC40_561EC250
	680	40x40	180		134		3.49	4.76	ALC40_681ED250
	820	40x45	149		111		4.01	5.46	ALC40_821EE250
	1000	40x50	123		92		4.58	6.22	ALC40_102EF250
	1200	40x55	106		80		4.93	6.51	ALC40_122EG250
	1800	40x80	67		50		6.77	9.27	ALC40_182EL250
350V d.c. (385V surge)	270	40x30	448		291		1.97	3.44	ALC40_271EB350
	390	40x40	312		203		2.64	4.56	ALC40_391ED350
	470	40x45	258		168		3.00	5.19	ALC40_471EE350
	560	40x50	216		141		3.41	5.93	ALC40_561EF350
	680	40x60	177		114		3.99	7.07	ALC40_681EH350
	1000	40x80	120		78		5.00	8.82	ALC40_102EL350
400V d.c. (440V surge)	220	40x30	521		320		1.79	3.33	ALC40_221EB400
	270	40x35	430		266		2.10	3.95	ALC40_271EC400
	330	40x40	350		216		2.38	4.52	ALC40_331ED400
	390	40x45	295		182		2.69	5.11	ALC40_391EE400
	470	40x50	245		151		3.12	5.92	ALC40_471EF400
	560	40x55	209		130		3.42	6.27	ALC40_561EG400
	680	40x60	173		107		3.86	7.01	ALC40_681EH400
1000	40x80	118		73		4.85	8.73	ALC40_102EL400	
450V d.c. (495V surge)	150	40x30	769		469		1.43	3.15	ALC40_151EB450
	180	40x35	638		394		1.66	3.58	ALC40_181EC450
	220	40x40	523		321		1.94	4.21	ALC40_221ED450
	270	40x50	426		257		2.34	5.30	ALC40_271EF450
	330	40x55	352		213		2.61	5.77	ALC40_331EG450
	390	40x60	298		180		2.92	6.45	ALC40_391EH450
	560	40x80	208		125		3.64	8.04	ALC40_561EL450

Note: Values of E.S.R. and Impedance quoted above are maximum



BHC AEROVOX LTD.

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01/98

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